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MAR 25 1939

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •

March 25, 1939

Chemistry in Miniature

See Page 180

A SCIENCE SERVICE PUBLICATION

Do You Know?

About one-third of Switzerland's area is mountain, glacier, or lake.

The plastics industry of the United States obtains 30 per cent. of its raw material from the farm.

Sixteen states have no speed limit on their rural highways.

In 30 years, the United States has reduced blindness from the condition known as "babies' sore eyes" by 75 per cent.

British physicians have set up a research foundation to investigate rheumatic disease in training centers of the Royal Navy.

Some of Peru's Indians drink a strong narcotic brewed from Caapi leaves, to make them temporarily fearless and reckless in fighting.

Scientists in the U. S. Geological Survey and the U. S. Bureau of Mines get about 700 inquiries about divining rod devices every year.

To avoid dangerous gas concentrations, special ventilation is usually needed in highway tunnels over 1,500 feet long, and sometimes in shorter ones.

Chinese hunters have made such extensive drives to capture giant pandas for export to zoos that in two valleys the animals are reported to be completely wiped out.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

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PUBLIC HEALTH

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In one Assyrian palace excavated by archaeologists even the harem was found decorated with masculine art, showing the king hunting, fighting, and taking tribute.

Injecting barium into the hands of dead bodies and following its progress by X-ray enabled a surgeon to trace natural routes of spread of infection in the hand.

To obtain a super-walnut, government scientists will cross the English walnut with the butternut for flavor and hardiness, then with the Eastern black walnut and the Japanese walnut for a sturdy and fruitful tree.

Woad, the blue stain with which prehistoric Britons decorated their bodies, was used as a fixer for indigo dye in the British dyeing industry until a few years ago.

Ramie fiber was extensively used in early paper making, it is learned by examining fibers in 49 Arabic manuscripts dating from the eleventh to the eighteenth century.

To show poultry farmers that they can save miles of walking by centralizing their buildings, experimenters checked the "chore routes" on 125 Oregon farms —shortest mileage was 62 miles a year; longest 450 miles.

SCIENCE NEWS LETTER

Vol. 35 MARCH 25, 1939 *No. 12*

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 2101 Constitution Avenue, Washington, D. C. *Edited by* WATSON DAVIS.

Subscriptions—$5.00 a year; two years $7.00; 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Back numbers more than six months old, 25 cents.

Members of the American Association for the Advancement of Science have privilege of subscribing to SCIENCE NEWS LETTER at the reduced price of $3 per year. Applications for this privilege should be accompanied by privilege card obtained from the Permanent Secretary, A.A.A.S., Smithsonian Institution Building, Washington, D. C.

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Cable address: Scienserve, Washington.

Entered as second class matter at the postoffice at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature and in the Engineering Index.

Advertising rates on application. Member Audit Bureau of Circulation.

SCIENCE SERVICE is the Institution for the Popularization of Science organized 1921 as a non-profit corporation, with trustees nominated by the National Academy of Sciences, the National Research Council, the American Association for the Advancement of Science, the E. W. Scripps Estate and the journalistic profession.

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PHYSICS

Fifth Dimension Is New Realm Entered by Professor Einstein

Celebrating Sixtieth Birthday, Scientist Wants New Dimension To Account for Electro-Magnetic Effects

PROF. Albert Einstein has entered the *fifth* dimension in his mathematical calculations seeking to link gravitation and electricity into one unified theory which would explain all physical happenings in one broad concept.

Thus the man who puzzled millions of people when he introduced the fourth dimension in his famous theory of relativity has gone one step further.

Announcing on his recent sixtieth birthday that he was making progress in his long-sought goal of connecting the force of gravity with the electric fields which make possible such things as light and radio waves, Prof. Einstein left undisclosed his method of attack on this toughest of all physics problems.

Securely buried in the technical literature of mathematics until now, may perhaps be found the hint of what Prof. Einstein is now doing.

In the *Annals of Mathematics* (July 1938) is a complex paper by Prof. Einstein and Peter G. Bergmann, assistant at the Institute for Advanced Study, entitled "On a Generalization of Kaluza's Theory of Electricity."

Prof. Theodor Kaluza of Göttingen University, Germany, reports Prof. Einstein's important paper, introduced the fifth dimension into conceptions relating gravitation and electricity but used this fifth dimension only as a mathematical idea without physical meaning.

Prof. Einstein's new approach ascribes a physical reality to this fifth dimension. But with this step the distinguished mathematician finds himself in a kind of space which is truly puzzling.

"There have been many attempts," reports the Einstein paper, "to retain the essential formal results obtained by Kaluza without sacrificing the four dimensional character of the physical space. This shows distinctly how vividly our physical intuition resists the introduction of the fifth dimension. But by considering and comparing all these attempts one must come to the conclusion that all these endeavors did not improve the situation. It seems impossible to formulate Kaluza's idea in a simple way without introducing the fifth dimension.

"We have, therefore, to take the fifth dimension seriously although we are not encouraged to do so by plain experience," explains Prof. Einstein.

Thus reluctantly, the distinguished mathematician states, he is entering into still more complex mathematical theories.

In his five-dimensional theory, space is closed along a vector indicating the fifth coordinate. This, he says, is the essential difference between his new work and that of Prof. Kaluza.

"By making this change," Prof. Einstein says, "the basic assumptions of the theory are considerably simplified. Furthermore it is much more satisfactory to introduce the fifth dimension not only formally, but to assign to it some physical meaning. Nevertheless there is no contradiction with the empirical four-dimensional character of physical space."

Like his previous theories, the new Einstein five-dimensional world has its own paradoxes.

For example a single point P in physical space is represented by an infinity of points in the five-dimensional space.

Ordinary space, as most people envision it, consists of the three dimensions of Euclidean space which we call height, breadth, and thickness, in speaking about an object like a box. To these Prof. Einstein linked time as a fourth dimension in his relativity theories.

The fifth dimension introduced now accounts for properties of the electromagnetic field which previously have not appeared in relativity. Instead they were accounted for by other theories not linked with gravitation.

As would be expected, the new theory is enormously complex. For example, it is necessary to introduce a special coordinate system in which space is described by 14 different functions.

Science News Letter, March 25, 1939

ARCHAEOLOGY

Find Sacred Kitten in Bronze Cat Coffin

A SACRED kitten in a bronze cat coffin. This unexpected discovery is reported by two metallurgical experts, who regard it as new light on Egypt's cat worship, 3,000 years ago.

CAT COFFIN

The find was made by Dr. Colin G. Fink, Columbia University's professor of electrochemistry, and Arthur H. Kopp, late of the Metropolitan Museum of Art technical staff, while giving chemical treatment to a bronze cat suffering from what is popularly called "bronze disease." Cleaning out cemented sand filling the image, they found embedded small bones. Zoologists consulted say these are bones of a fetal cat.

"All indications trace the presence of these bones to ancient times," says a report by Prof. Fink and Mr. Kopp, in Technical Studies.

Whether Egyptians regularly put sacred cats inside hollow bronze cat images, is still to be learned. A good many bronze cat images are known, but others have been empty when found. The images are usually regarded as idols, venerated by worshippers of the cat-headed goddess Bastet, personifying the sun.

Science News Letter, March 25, 1939

PHYSICS

New Optical Glass Has Highest Light Bending Power

Made From Rare Elements Instead of Silica, New Glass Will Make Possible Faster Lenses for Cameras

A DISCOVERY which may be a major stride in the advance of photography and which permits lens makers to produce "faster" and better lenses has been made by Dr. George W. Morey of the Geophysical Laboratory of the Carnegie Institution of Washington.

The discovery of a way to make optical glass out of rare chemical elements instead of common silica permits the production of a glass which has a very high index of refraction and a low dispersion, it is disclosed in a patent, No. 2,150,694, just granted to Dr. Morey. This means a lens which serves the photographer more efficiently.

Some of the optical glasses of Dr. Morey have the highest index of refraction (light-bending power) ever reported; more than 2.00. Only comparable refraction is that of the diamond, which is about 2.41.

The optical properties of glass used in lenses have long limited optical lensmakers in the exactness of the work they could produce. Dr. Morey's discovery of a new kind of glass should remove this present limitation.

Out of the work should come lenses of greater light-gathering power which would be a boon to all miniature camera fans who ever seek greater apertures.

Moreover, high index of refraction and low dispersion permit better corrections for chromatic aberration, the annoying property of some lenses of bringing different colors to different focuses.

Chemical elements most people have never heard of are used in producing the glass. Yttrium, lanthanum, columbium, hafnium, tantalum, zirconium, strontium, boron, and barium are typical.

The aim of Dr. Morey is to produce a glass with an index of refraction (ability to bend light rays) of over 1.65. One glass, made of 60 per cent. lanthanum and 40 per cent. boron, has a refractive index of 1.72 and a dispersive index of 54.

Another composed of 33 per cent. lanthanum, 41 per cent. thorium and 26 per cent. boron has a refractive index of 1.76 and a dispersive index of 52.

As a comparison, ordinary flint glass of a lower refractive index (1.65) would have a dispersion of about 33. Small dispersion numbers mean high dispersion and vice versa.

The new work is a continuation of efforts made in America since the World War to produce better optical glass. At the time of the conflict, the United States found it had been buying most of its superior optical glass from Germany. Furious wartime research partially overcame the difficulty, but research has been going on ever since to make American optical glass equal or superior to any glass in the world. Dr. Morey's work is a contribution to this end. Patent rights to his discovery have been assigned to the Eastman Kodak Company.

Science News Letter, March 25, 1939

PSYCHOLOGY

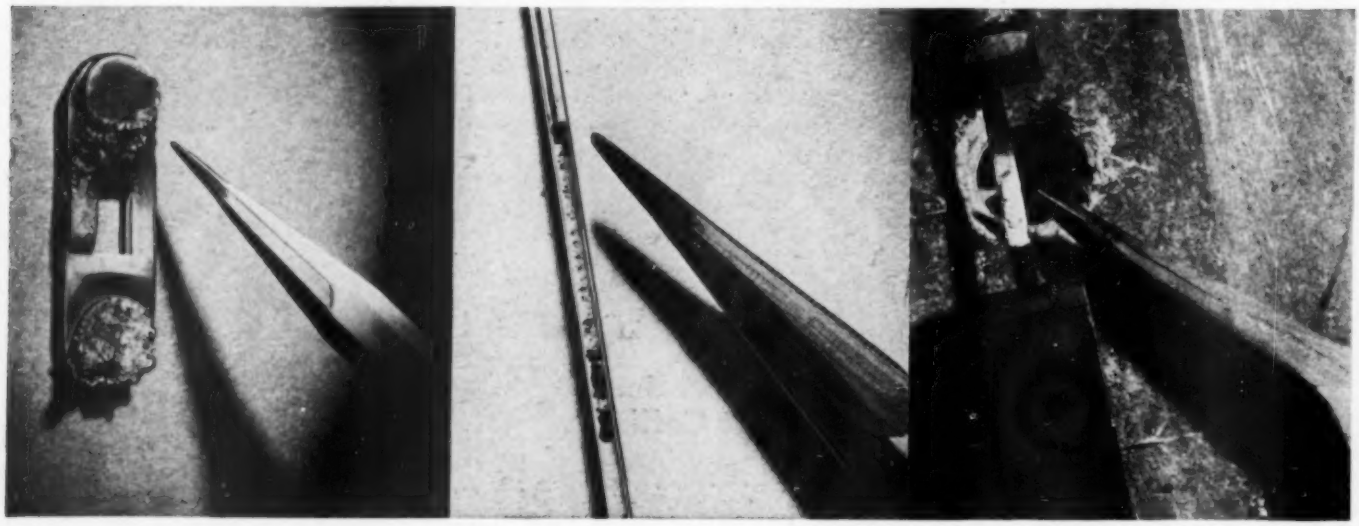
Neglected Life Periods Are Below 6 and Over 60

TWO of the most critical periods of life, before six and after sixty, are not getting the attention they deserve. There have been old age movements that have kicked up considerable political sand because the advancing years do not remove the right to vote. The pre-school boys and girls are too young to form a political bloc.

The three or four years between infancy and the first grade constitute the most important interval in life for formation of character, temperament and intelligence. It might almost be logical

TYPICAL JOB

The microchemist must analyze the chemical composition of the corroded material on an electric light switch which made the lights go out in someone's home. The pencil points (left) to the tiny speck of material available. Tiny particles are loosened with acid and drawn up into a fine pipette (center) to be transferred to electrical sintering equipment (right) which burns off all combustible materials and purifies the remainder. All the photographs on this and the facing page are from the General Electric laboratory. The photograph on the cover of this week's SCIENCE NEWS LETTER is from a similar laboratory at Westinghouse.



MICROANALYSIS

Minute specks of matter are made to yield their history and chemical composition in this newest trick of chemistry. C. G. Van Brunt, chief of General Electric's microchemical laboratory, transfers a tiny specimen to a small centrifuge flask. This unposed picture of a scientist at work shows a laboratory table crowded with apparatus. Note the tiny Bunsen burner in the foreground, no larger than the match box.

to trade part of the years spent in high school, college, or graduate study for the most modern nursery school training, if a child could not have both. Of course, the nursery school experience would undoubtedly make him better material for an advanced education.

State University of Iowa studies show that I.Q. is increased by an affectionate and intelligent environment in home and nursery school. This gives added impetus to the idea that the age for conventional beginning of schooling should be extended downward. Two or three instead of six would be the age at which the children would start to school.

School for the two, three, four and five year olds is different from what it is for the older children in the grades. There is more individual attention and there is no air of the conventional school room. Teachers and children work together to create a little world that is fitted to the abilities and interests of these little beginners in life. There is no hurry-hurry or urgent drive to learn. Nursery school children want to go to school. It is fun to go. Just as older children in the more successful schools now want to go.

Our public schools extended their sphere first upward into the high school and then the junior college. Now they give promise of eventually starting the child's education earlier.

Science News Letter, March 25, 1939

CHEMISTRY

Whey, Once Mostly Wasted, Now Finds Profitable Uses

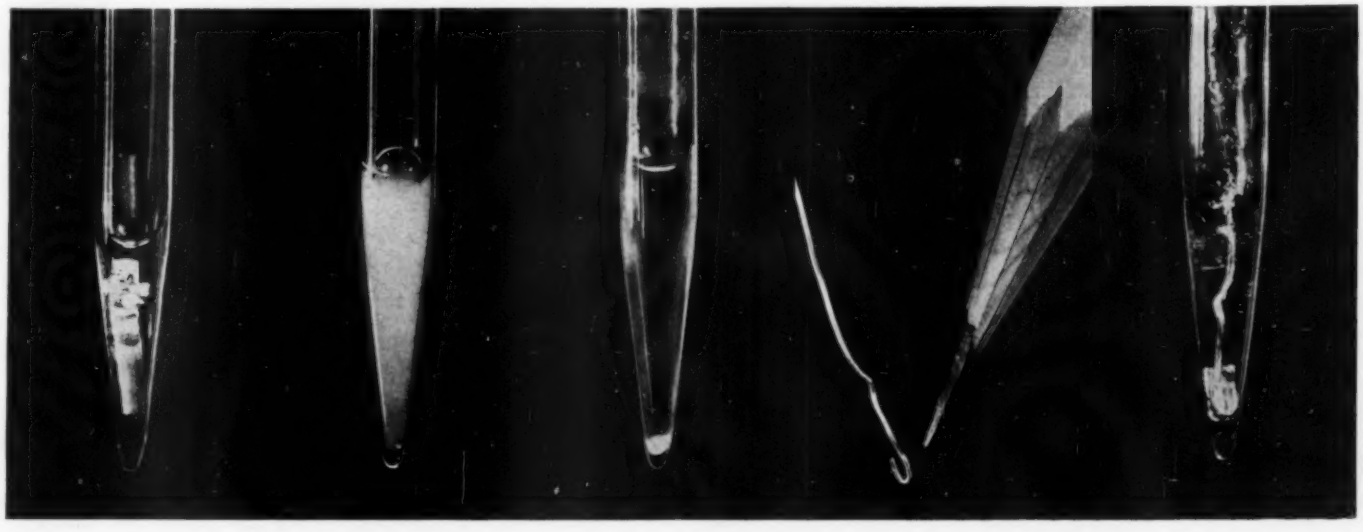
WHEY used to be something we heard of in connection with Little Miss Muffet's misadventures with a spider. Only if we were in the dairy business was our knowledge more extensive —and more painful. Whey was the leftover part of the milk after everything valuable had been taken out, smelly to have around and troublesome to dispose of. Whey was the milkman's headache.

Objectively, whey is the watery liquid left after cream has been extracted for butter and the solidifiable protein (casein) taken out for cheese. It contains some protein and a good deal of milk sugar. It isn't really palatable: Miss Muffet probably just used the spider as an excuse to spill the stuff, which she was eating under parental duress anyway.

Now, however, thanks to the imagina-

WHIRLED

At left the sintered specimen is placed in a tiny centrifuge tube. In solution form the sample under analysis is whirled around to effect a mechanical separation of the precipitate created by reagents. After centrifuging the precipitate comes to rest in the apex of the tube ready to be removed for analysis. Tiny hooks are made of platinum wire for use in handling the small samples. The inertness of platinum to acids and to hot flames makes it a valuable metal for chemical work.



tive ingenuity of Department of Agriculture chemists, uses both dietary and industrial are being found for whey. The Miss Muffets of the future will get their whey in the form of candy, pastry, pudding and meringue. It will figure in the tanning of the leather for shoes and handbags, in the making of plastics for toilet sets, automobile panels and shiny high heels.

Whey is produced in simply awesome quantities in this country—enough to float a whole navy. It comes mainly from the cheese industry, to the amount of well over five and one-half billion pounds a year. Production of industrial casein adds more than another billion pounds.

The greater part of this is still fed directly to livestock—mainly the omnivorous and undiscriminating pig. But use as swill is a low-grade, low-price outlet; better and more profitable to find uses in human food and manufactured products if possible. That is what the chemists have been doing.

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ENTOMOLOGY

Grasshopper Plague Depends On Turn of Weather Now

GRASSHOPPERS will either reach plague proportions next summer or will remain relatively harmless, according to the turn of the weather from now on. If it is persistently cool and rainy, especially in the late spring, hatching will be retarded and young 'hoppers will be killed. If it is dry and warm there will be new trainloads of poison bait and armies of men to scatter it.

Surveys of the U. S. Department of Agriculture indicate a great wedge of grasshopper eggs distributed across the country from western Washington to northern Michigan and coming to a blunt tip in Texas. Most severe infestation follows two long lines: one right along the western boundaries of the Dakotas and Nebraska, on down to the Texas panhandle; the other from western Minnesota to an especially bad spot in western Iowa and eastern Nebraska, thence across southern Iowa and along the eastern "bulge" of Illinois. There is also an isolated island of infestation along the Mississippi river bottoms of Arkansas, Tennessee and Mississippi.

Grasshopper eggs were laid abundantly last fall, and the winter weather does not affect them to speak of. It is only when they are emerging from the eggs and crawling about as infant insects that they are susceptible to chill and wet.

Science News Letter, March 25, 1939

ASTRONOMY

New 82-Inch Telescope Receives Its First Starlight

THE NEW giant among telescopes, the 82-inch mirror of new McDonald Observatory, Fort Davis, Texas, has been given its baptism of starlight and proved to be practically perfect in mirror quality and operation.

For a number of nights, it was learned, the new telescope has been in use.

"Every new observation will mean an addition to our knowledge of the universe," said Dr. Otto Struve, director of both Yerkes and McDonald Observatories, after the preliminary observations.

The telescope was first pointed at a star on March 2. When brought to a focus the star image was steady and sharp, showing that the mirror was practically perfect. Photographs of brighter stars and of the moon were then obtained at the Cassegrain focus of the instrument. The first star whose spectrum was photographed was the fifth magnitude object, 17 Lepocis, located south of Orion. This spectrum shows many features never before recorded with any instrument.

The McMath type electric drive controls the telescope so accurately that once adjusted for an observation the astronomer does not need to stay at the eyepiece to guide the telescope. The astronomer at the telescope moves it into position by push-button controls.

Since all mirrors of the 82-inch telescope are coated with aluminum, observations in the ultraviolet region of the light spectrum will be particularly efficient. Most of the old telescopes are designed in such a way that the ultraviolet light is lost, even when the conventional silver mirror coating is replaced by aluminum with its superior reflecting power in the ultraviolet.

A group of eager astronomers who made the tests included Dr. Struve, Prof. George Van Biesbroeck, Prof. Gerard P. Kuiper, and Prof. C. T. Elvey of the joint Yerkes-McDonald Observatory staffs, as well as Dr. J. S. Plaskett of the Dominion Astrophysical Observatory at Victoria.

McDonald Observatory was built by the University of Texas and is operated jointly by that university and Yerkes Observatory of the University of Chicago.

Science News Letter, March 25, 1939

AGRICULTURE

Brazil-U. S. Agreement Is Part of Greater Plan

THE ARRANGEMENT for cooperative agricultural research included within the new Brazil-U. S. trade agreement is part of a greater plan which is intended to extend American research facilities to all tropical American countries, with a view to mutual interchange of products that will not interfere with existing agricultural systems.

Possible developments under the new arrangement include: re-establishment of the Para rubber industry, now largely in the hands of the British and Dutch in the East Indies; stimulation of existing trade in cacao, cubé (for insecticides), palm oils and waxes, manioc, etc.; development of traffic in tropical fruits through better refrigeration facilities; experimentation in new crops like tea, spices, hemp and jute.

Bills now before Congress call for appropriations to finance three specific projects:

(1) The establishment of a new agricultural attaché in Rio de Janeiro.

(2) A survey of the tropical resources of Brazil by scientists of the U. S. Department of Agriculture.

(3) The loan of Department of Agriculture research workers to investigate problems of Brazilian farms and forests.

Similar set-ups for other Latin-American countries are contemplated. Additional agricultural attachés are planned for Mexico City, Havana and Panama. There is already one in Buenos Aires.

Other parts of the general plan call for the training of South American meteorologists by scientists of the U. S. Weather Bureau, the establishment of a tropical forest experiment station in Puerto Rico, cooperation with radio companies for the transmission and dissemination of information, and the publication of scientific results after translation into Portuguese, Spanish and French.

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CHEMISTRY

Death From Skies In War Would Strike Down Civilians

Three Menaces At Which Protection Is Aimed Are Threats of Explosion, Gas, and Incendiary Bombs

THE capitals of Europe have feverishly groomed their civilian populations for attacks from the sky. Very few doubt that the non-combatants, hundreds of miles behind the lines of active fighting, will immediately be plunged into warfare.

Any city which produces anything which can be construed as remotely affecting the final outcome of the conflict —and that, of course, includes all but tiny hamlets—may be a military objective under modern warfare.

Danger from the skies, in present day warfare, means aerial bombing and the civilians in the cities will be likely to have three distinct types of menaces dropped on them from high overhead.

1. Explosive bombs containing up to a ton of shattering explosive that will virtually destroy any objects they hit. Tests have shown that it takes 80 feet of earth or 12 feet of concrete to protect against some of these giant bombs. One explosion from such a bomb can shatter a whole city block of ordinary dwellings. Against such giant bombs civilians can expect little effective protection other than those bomb-proof shelters already built or the more massive buildings and subways which exist in cities.

It takes huge planes to carry effective payloads of such bombs. While older-style bombing planes would probably be used there is a relative scarcity of very modern large bombing planes comparable in performance with Uncle Sam's "flying fortress" type. The effective radius of these missiles is less than that of gas or fire-creating bombs.

2. More personal, in its attack on civilian populations, is the gas bomb. The rush to supply gas masks to all the people of Europe's capitals is evidence of the menace which military leaders believe poison gas bombs will bring.

The imminence of poison gas bombings raises the question of whether new and yet undisclosed gases exist in the laboratories that would be more deadly than anything now known. There is such a possibility, but reasoning suggests that while there may be secret gases they would probably not be more efficient than known gases. Chlorine and mustard gas (dichlorethyl sulphide) were potent weapons during the World War, and can do major damage by themselves.

One reason for their continued use, in a new conflict, would be that the methods for their efficient manufacture and handling have been worked out. There would not be the delay in their application which occurred during the World War. It took the Allies, at that time, a year to get into production of mustard gas after the first German attacks.

The enemy of all poison gases is wind, which can dispel the gases until the concentrations fall below those which will cripple or kill. A principal military advantage of mustard gas, during the World War, was its weight. It would seep down into trenches, shell pockets and dugouts and contaminate them for days.

This means, for civilian city populations, that the first menace of mustard gas could be overcome by going to the second stories of homes. Gas proof shelters, effective for some period of time, are cheap to construct in most homes and it is to be expected that city dwellers will retire to such shelters during the actual attack and await, if necessary, the arrival of trained rescue squads to clear up the gas menace by the application of chloride of lime about the premises.

The biggest danger from gas attacks is the panic that might be induced. Confusion, due to fear, and not due particularly to the action of the gas itself, would be expected to bring the greatest menace to the most people.

This has spurred efforts to combat fear by training the populations of large European cities in the use of the gas mask and the steps to be undertaken, in event of an aerial gas attack.

After the proper protective methods were worked out for defense against gas attacks, during the World War, the effectiveness of this wartime weapon declined rapidly among disciplined and trained troops. The basic idea behind civilian training is to obtain, to the greatest degree possible, civilian discipline.

3. The final menace from aerial attack is aimed—not so much at personal injury as poison gas but—toward property damage. The giant explosive bombs, of course, cause such damage, but these losses are costly to produce and would not be widely used for general destruction, but only against the most important military objectives.

However, fire is still about the best destroyer of property that exists and so a serious factor in an aerial bombardment would be the fire-creating bomb.

The thermit bomb, producing a temperature of 2,300 to 2,700 degrees Centigrade, is a fire producer par excellence.

These thermit bombs, containing aluminum and iron oxide, are tiny objects. A single plane could carry hundreds. Scores upon scores of fires could be created in a great city at practically the same instant and by this means give the fire-fighting units such an enormous task that the risk of a general conflagration would be great.

In cities where many of the homes are of masonry and the roofs are essentially fire-proof the risk from thermit bombs would be reduced. The danger in areas where the buildings are of wood would be great.

The weather would, perhaps, determine the type of attack which would be made on a given city at a given time. In windy weather thermit bombs, spreading fires, would be a good rule. This wind, however, would be just the thing not desired for gas bombing and so, on a quiet day, thermit bombs would probably give place to gas bombs. The great explosive bombs, of course, would be equally effective upon all occasions.

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MEDICINE

Discover Substitute For Blood Transfusion

A SUBSTITUTE for blood for transfusion to revive patients suffering from shock has been discovered by Drs. H. A. Davis and J. F. Blalock, Jr., of the University of Tennessee. Instead of blood, they have found, physicians can use the fluid removed from patients suffering from abdominal dropsy or from pleurisy.

This fluid, called ascitic fluid, must be typed just as blood must be before use in transfusions. It is useful in cases of shock in which there is a concentration of red blood cells but a deficiency of the fluid portion of the blood. Storing the fluid in a refrigerator does not affect its usefulness. Technical details of their investigations of this substance as a substitute for blood when the latter is not available have been reported to the *Journal of Clinical Investigation*.

Science News Letter, March 25, 1939

PUBLIC HEALTH

Scientists Turn To Care of Elderly People

WOULD you be willing to join an American League for the Promotion of the Health and Welfare of Elderly People?

So far, no such organization exists, but the beginnings of a movement toward the objective of such a league have been taken. Faced with the fact that an increasing proportion of the population is middle-aged to elderly, medical and social scientists are turning their attention to the health and welfare problems peculiar to older persons. A group of 26 of these scientists, under the sponsorship of the Josiah Macy, Jr. Foundation, has just written a book on the subject. (Problems of Ageing: Biological and Medical Aspects; edited by E. V. Cowdry).

At the close of the book is the suggestion for the organization of a league for promoting the health and welfare of elderly people. The suggestion is made by Dr. Lewellys F. Barker of Baltimore. Dr. Barker calls attention to the improvements in child health and welfare that have been made in this country through activities of organizations like the Child Welfare League of America. Part of the reason that we now have a problem of the elderly is that these very improvements in child care have helped so many children to escape the health hazards of former generations and to live to face the hazards of a much older period of life.

Ways to minimize these hazards of old age are now being sought. When found, their widespread application can be furthered by voluntary lay organizations such as have already helped apply scientific knowledge toward the promotion of child health. This is why Dr. Barker proposes the League for the Promotion of the Health and Welfare of Elderly People.

"If such a league could be organized," he says, "one might expect to see most valuable results for the older section of our population within a very short time."

Science News Letter, March 25, 1939

AERONAUTICS

Smooth-As-Glass Airplanes Made By Flush Rivets

SMOOTH-AS-GLASS wings and fuselages are now giving warplanes and airliners still more speed. Widespread use of flush rivets instead of the projecting "button" type now most common was predicted at the national aeronautic meeting of the Society of Automotive Engineers.

But the boost in speed will also raise production costs, Don R. Berlin, chief engineer of the Curtiss Aeroplane Division of the Curtiss-Wright Corporation, declared.

Flush riveting is now emerging from the laboratory and going onto production lines, Mr. Berlin stated. But even by the most carefully worked out methods, it will still cost 30 per cent. more than conventional riveting to countersink those rivet heads into the skin of the plane itself.

The cost begins to pile up when it is remembered that an average airplane contains about 30,000 rivets in its skin and that driving each one of a conventional type of rivet home costs a nickel, figures he presented showed.

Yet the demand for increased speed will insure the widespread adoption of this newest method of cleaning up an airplane's surface and cutting its drag, both he and Manley Hood, National Advisory Committee for Aeronautics scientist, indicated.

A 275-mile-an-hour airplane, otherwise "clean" aerodynamically, but held together with button rivets, would be put in the 300-mile-an-hour class by flush rivets, one engineer estimated. Flush riveting is relatively difficult in aircraft construction because of the thinness of the metal sheets with which planes are covered.

Science News Letter, March 25, 1939

IN SCIENC

ORNITHOLOGY

Hybrid Hens At Cornell Lay Light Blue Eggs

ROBINS will have to look to their honors this spring. Light blue eggs are being laid by hens of a new hybrid type, produced in the poultry department of Cornell University. The hens are a cross between the ordinary white leghorn and a South American fowl known as the Araucana hen, which lays deep blue eggs. When crossed with fowl that normally lay brown-shelled eggs, a hybrid is produced that lays eggs with olive-colored shells.

Science News Letter, March 25, 1939

MEDICINE

New Infant Disease Cause is Discovered

THE cause of a new and fatal convulsive ailment of babies has been identified by Drs. Abner Wolf, David Cowen and Beryl Paige of the College of Physicians and Surgeons, Columbia University.

Like the so-called "sleeping sickness," the new disease attacks the brain, but it also attacks other tissues such as the spinal cord and is called encephalomyelitis. It is due, the Columbia investigators find, to a large one-celled parasitic animal form known as a toxoplasma. This kind of germ has been found in animals but has not previously been recognized as a cause of human illness.

Other forms of human disease due to this kind of germ, however, very probably exist, the scientists point out. (*Science*, March 10)

Proof of the fact that the toxoplasma was the cause of the fatal illness of one infant was obtained when material from the brain and spinal cord of the infant was injected into laboratory animals and caused the same illness in some of them.

Toxoplasma hominis is suggested as a name for the germ that caused the human ailment. Besides the case studied by the Columbia scientists, four others, believed due to the same germ, have been reported, one each from New York City, Chicago, Prague and Rio de Janerio.

Science News Letter, March 25, 1939

NCE FIELDS

MEDICINE

Advises Individually Prescribed Vacations

BOTH the healthy and the sick vacationist would greatly benefit by individually planned, medically supervised vacationing, preferably in a health resort, in the opinion of Dr. Charles I. Singer of Long Beach, Calif.

In a report (*Journal, American Medical Association,* March 11) Dr. Singer says that:

Some 35,000,000 persons take part in undirected seasonal vacational migrations in America.

They are confronted with a climatic change, stimulating or sedative. If the change is properly selected, it can be used in preventing or influencing disease.

The health-promoting natural resources of Europe are far more effectively developed than are those in this country.

Dr. Singer outlines the steps to be taken in developing a modern American climate therapy. Such a plan will, he believes, benefit the American public, medical science and the medical profession at large.

Science News Letter, March 25, 1939

TECHNOLOGY

Thin Rubber Coverings Help Preserve Foods

NEWEST transparent food wrappers are made of tightly stretched rubber. The day is not far distant when you may be buying a broiler chicken encased in a "skin" tight casing of clear rubber, and sealed in a vacuum inside this rubber covering.

Made of special rubber free from sulfur the new coverings, in their original form, look like deflated toy balloons with an extra wide mouth. How this balloon is put around a broiler is a splendid example of man's ingenuity.

The wide mouth of the rubber sack is placed over the neck of a special wide open container and the balloon is expanded in a reverse sense i.e. it is enlarged by creating a vacuum between it and the container. Chilled to a low temperature the sides of the container "freeze" the rubber in this expanded shape.

Next the broiler is dropped into the frozen rubber sack, the air is exhausted from around the chicken and finally the neck of the rubber bag is twisted into an air tight seal.

Now comes the trick, says the Bulletin of Arthur D. Little, Inc., in describing the new packing method. The rubber bag with its chicken is dipped into warm water. The heat "thaws" the rubber which contracts to its original dimensions or at least tries to for it stretches taut over the chicken in a clear, dustproof and germproof coating.

The advantages of the new wrapper are many. The elimination of air prevents the development of rancidity in the fat of pork. Chickens can be stored without "freezer burn" which is the worry of low-temperature preservation of poultry. The prevention of moisture loss maintains original weight. And the use of carbon dioxide inside the rubber covering aids preservation for those products which keep better in such an atmosphere. Rubber bags large enough to contain a 350-pound side of beef are said to be a practical possibility.

Science News Letter, March 25, 1939

PUBLIC HEALTH

Beards Oked For Workers As Silicosis Preventive

FOUND: a use for a full beard, Barbarossa style.

Scientists of the Air Hygiene Foundation in Pittsburgh cite British silicosis authorities, who have been examining the incidence of the disease in relation to the hirsute adornment of the face.

Among stonecutters erecting huge masonry structures in a dusty atmosphere it was found that clean-shaven men suffered most from silicosis. Men with mustaches fared much better and men with full bushy beards and mustaches were practically immune.

These results are in line with tests made by the Air Hygiene Foundation's Preventive Engineering Committee headed by Prof. Philip Drinker of Harvard University, which show the nose is an inefficient sieve to screen out dust particles from the lungs.

Prof. Drinker's committee has just completed the bulletin "Routine Sampling for Control of Atmospheric Impurities" which gives ways of checking 45 dangerous substances found in industrial atmospheres: chemicals like ammonia, arsenic dust, benzene, lead dust, phenol and sulphur chloride.

Science News Letter, March 25, 1939

PHYSIOLOGY

Device Measures Pilot's Ability To See at Night

DEVELOPMENT of a device to measure the sensitivity and adaptability of an airplane pilot's sight under conditions of low illumination is announced by a man-and-wife research team, Drs. C. E. Ferree and G. Rand of the Research Laboratory of Physiological Optics. (*Science*)

Known as the Ferree-Rand Light Sense Tester, it measures a person's ability to look from fields of vision such as the instrument board in the cockpit to points outside the window. Through its usefulness in checking the eyesight of pilots, it should add to safety in the air.

Science News Letter, March 25, 1939

ARCHAEOLOGY

Hunt For Columbus Relics May Be Made in Haiti

A SEARCH for relics of Columbus' first ill-fated American colony may be undertaken in the West Indies by Harvard University's department of history.

Since the place where Columbus' ship, the Santa Maria, went aground at La Navidad, Haiti, has never been located, plans to search the north shore where it must have lain are being considered by Prof. S. E. Morison. Material from the ship or bones of the sailors who were left there to start a colony, while Columbus sailed on, might be discovered. When Columbus returned to visit the colony, he was dismayed to find the 44 colonists slain and the fort they built from the ship's timbers burned by Indians.

White men who started this tragic settlement are known to have scattered among the Indians, unable to maintain themselves as a united band. Archaeologists hope that search of the region may reveal some European-made belongings among Indian settlements. This would provide the first clue for dating the types of culture of Indians in the West Indies. Deposits of pottery and other Indian relics so far discovered have provided no clue to their age or sequence, and finding some types with European associations would show these were most recent.

An eight-foot anchor found by United States Marines in Haiti about 1933 is exhibited in Port au Prince, and may well be the anchor of the Santa Maria. It is undoubtedly old in type, though anchor styles changed too slowly to date such an object closely to the Columbus era.

Science News Letter, March 25, 1939

ASTRONOMY

Eclipse in the East

Event Visible in Eastern United States and Canada Will Be Annular, or Partial; Spring Stars Appear

By JAMES STOKLEY

THE chief event on the April celestial calendar comes on the 19th, for then people in the eastern half of the United States and Canada will see their first eclipse of the sun since February, 1935. This will only be a partial eclipse, however, and will not arouse very great scientific interest, though, as always, it will be interesting to watch.

Along a path crossing the Aleutian Islands, Alaska and the North Pole, there will be visible what is called an "annular eclipse." Any eclipse of the sun is caused when the moon comes between the sun and the earth. Though the diameter of the moon is only 2160 miles, as compared with 864,100 for the sun, the latter is 92,870,000 miles away, while the moon is at a mere 238,857 miles. Thus, they look about the same size in the sky. But these figures for distance are only average, and both the moon and the sun vary slightly in this respect.

The nearer the moon, the bigger it seems, and if it eclipses the sun while it is close, that body is completely covered. But if the eclipse occurs when the moon is farther away than average, or the sun nearer and bigger, then the moon cannot cover the sun entirely. Even though it comes squarely in front of it, a rim of the sun's disc is seen around the dark moon. This ring, or "annulus" gives us the name of "annular" eclipse.

Because of the brightness of this remaining part of the sun, the solar corona, and other features which are visible at total eclipse time, are not seen. An annular eclipse is of slight scientific value, and no expeditions are going to Alaska to observe it.

Partial in United States

Over an area larger than that of the annular eclipse, the moon will come partially in front of the sun, producing a partial eclipse. The region where some eclipse will be seen includes the rest of Alaska, all of Canada, all the United States (except the peninsula of Florida), Greenland, Iceland, most of the north Atlantic Ocean and eastern Europe.

The nearer one is to Alaska, the more fully will the sun be hidden. In Juneau, Alaska, for instance, 92 per cent of the sun's diameter will be covered. In New York, only 16 per cent will be eclipsed. There the moon will start to bite into the sun at 10:58 a. m., E. S. T., the eclipse will be at its height at 11:50 a. m. and it will be over at 12:43 p. m. In Chicago it will be a third of total, beginning at 9:20 a. m., C. S. T., at maximum at 10:25 a. m., and ending at 11:33 a. m. For San Francisco, where the eclipse will be 59 per cent full, these times are, in P. S. T., 6:38 a. m. for the beginning, 7:39 a. m. for the middle, and 8:47 a. m. for the end. New Orleans will barely see it at all, for there will only be 9 per cent, with the times, in C. S. T., 9:18 a. m., 9:56 a. m. and 10:36 a. m.

Protect Your Eyes

Of course, no one should try to look directly at the sun for it might cause serious injury to the eye. Smoked glass, or, still better, a densely exposed and developed photographic film, is a good protection. Another scheme is to look through a pinhole in a card. This dims the sun's light to a comfortable extent. Even in places where as much as half of the sun's diameter is covered, there will be no noticeable darkening of the landscape, as far as the eye can tell.

The April evening skies mark the virtual end of the appearance of Orion, the huge warrior which until recently has blazed in the south. He can still be seen, of course, but his glory is at an end. The accompanying maps show the appearance of the heavens at 10:00 p. m. on the first, 9:00 p. m. on the 15th, and 8:00 p. m. on the 30th. There, on the map for the south, right over the word "west," you see him indicated, but how different is this from the way he was in December and January!

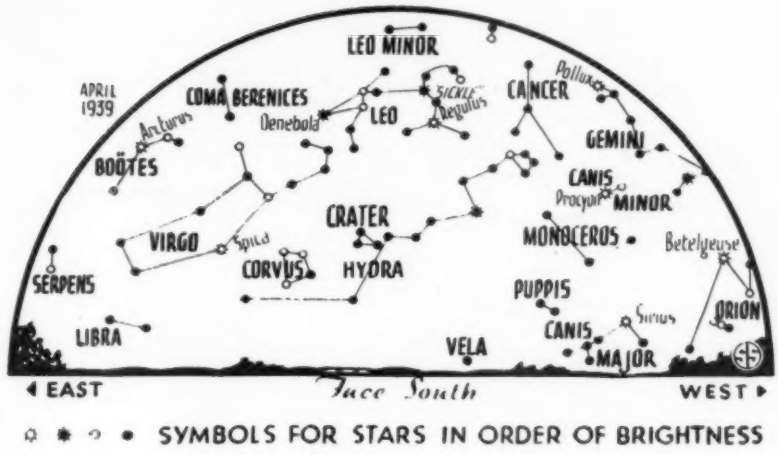
Rigel, the bright star in his heel, is so low that it does not appear on the map, though earlier in the evening it can be seen, below the three stars in a row which mark the belt. Betelgeuse, in one of his shoulders, is still apparent. So also is nearby Sirius, the dog star, in Canis Major, the great dog. To the right of Orion, and about as high, is Aldebaran, in Taurus, the bull, which has also lost his former splendor. But during the summer these stars will return to visibility, in the morning, just before sunrise. Then they will gradually rise earlier and earlier, until, about next Christmas, they will again be as prominent as they were a short time ago.

Taking their places, we have a new crop of constellations, most conspicuous being Leo, the lion, which is now in the south. The "sickle," with Regulus at the end of the handle, enables this group to be recognized easily. To the north, swings the ever-familiar great dipper, of Ursa Major, the great bear. The pointers, marked on the map, show the way to the pole-star, below.

"Cutter's Mainsail"

If you follow the curve of the dipper's handle southward, you come to Arcturus, in Bootes, the bear-driver, and then to Spica, in Virgo, the virgin. To the right of Spica is a quadrilateral of stars called Corvus, the crow, and sometimes, from its shape, the "cutter's mainsail."

To the west, above Orion, are Gemi-



ni, the twins, with Castor and Pollux. To their left, and a little lower, just above Sirius, is Procyon, in Canis Minor, the lesser dog. About as high, in the northwest, is Capella, in Auriga, the charioteer. And low in the north, like a "W" resting on one side, is Cassiopeia, the queen.

No planets are placed this month in such a position as to be shown on the maps. In the last few days of April Mercury will be seen low in the east, in the morning twilight. Venus is still the conspicuous morning star, visible in the southeastern sky, even after dawn has started to break, but it is drawing closer to the sun. Jupiter is in the same direction, and will pass Venus on the evening of April 21, when the planets are not visible in the United States. But if you look at them the next morning, you will still see them close together, with Venus the more brilliant of the pair. Saturn this month is nearly in line with the sun and will not be seen at all.

Only Mars is left, but that is seen as a brilliant red planet, in the constellation of Aquarius, in the east after midnight. We now have a foretaste of the summer, when it will be closer, and brighter, than for many years past.

Celestial Time Table for April

Saturday, April 1, 8:00 a. m., moon nearest earth, 226,500 miles away. **Monday, April 3,** 11:18 p. m., full moon. **Monday, April 10,** 12:27 a. m., Algol at minimum; 4:33 p. m., moon passes Mars, about 11 lunar diameters to north. **Tuesday, April 11,** 11:11 a. m., moon at last quarter. **Wednesday, April 12,** 9:16 p. m., Algol at minimum. **Thursday, April 13,** 4:00 a. m., moon farthest away from earth, 251,400 miles away. **Saturday, April 15,** 6:05 p. m., Algol at minimum. **Sunday, April 16,** 11:04 p. m., moon passes Jupiter about 10 lunar diameters to north; 12:54 p. m., moon passes Venus, about 11 lunar diameters to north. **Wednesday, April 19,** morning, partial eclipse of sun, seen as annular in Alaska; 11:35 a. m., new moon. **Friday, April 21,** early a. m., meteors from constellation of Lyra; 9:00 p. m., Venus passes Jupiter about half a lunar diameter to south. **Wednesday, April 26,** 1:25 p. m., moon at first quarter. **Friday, April 28,** 5:00 a. m., moon nearest earth, 229,400 miles away.

Eastern Standard Time throughout.

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PHYSICS

Cosmic Ray Research Will Aid Study of Distant Nebulae

COSMIC RAYS, already a potent means of learning new things about the nuclei or "hearts" of atoms, will next have the task of helping scientists discover new facts about distant nebulae.

This new role of cosmic ray research in the future was suggested at the Sigma Xi lecture at Louisiana State University by Prof. Carl D. Anderson of California Institute of Technology.

Prof. Anderson, brilliant young winner of the Nobel Prize in Physics in 1936, when he was only 31 years old, is noted for his researches on cosmic rays and for his discovery of the positron, fundamental atomic particle.

"Cosmic ray researches have told us new facts about the smallest things in the universe, the elementary particles," Prof. Anderson said. "They give rich promise of telling us in the near future equally important facts about the largest things in the universe, about the far-away nebulae and other astronomical bodies.

"Cosmic ray investigations will support and be supported by astronomical investigations. The electroscope, Geiger counter and cloud chamber will work hand in hand with the 200-inch telescope, each doing an important job in translating into knowledge those messages which come to us from outer space."

The energies of some cosmic ray particles are enormous, Prof. Anderson continued. They are more than 1,000 times as energetic as any other particles known in the science of physics.

In studying cosmic rays in the laboratory scientists are in effect "sitting in" at the death and birth of matter, declared Prof. Anderson:

"A certain electron, for example, which may have been playing its prosaic role as a part of an atom for hundreds or thousands of years, will be struck a blow so hard that it will be projected through space at a speed greater than a hundred thousand miles a second; it will in turn strike several million other electrons and pass through several million atoms before it is finally brought to rest and again attaches itself to another atom, where it may carry out its normal duties with very little disturbance for perhaps another million years."

"Twins" Born

Other electrons, however, may be annihilated by the cosmic ray impact. After several million years' existence, perhaps, suddenly this electron disappears. But out of this annihilation a new electron appears which is one of a set of atomic "twins." These twins are alike except that they have opposite electrical charges.

Such positive and negative electrons, created in pairs, follow a greatly different "life" pattern. The negative electron joins other similar electrons and takes up a normal existence in some other atom.

The positive electron, however, survives only for about a billionth of a second. In this brief fraction of time the positive electron finds a negative electron and the two combine and neutralize their electrical charges. By this union, Prof. Anderson said, they are annihilated and in their stead appear "two bits of radiant energy whose ultimate fate will be to interact with other electrons in the surrounding material."

Prof. Anderson's lecture is the first of

14 which he will give in universities through the country in the next three weeks. The lectureship is sponsored by Sigma Xi, national honorary society for the promotion of research in science. Election to membership in Sigma Xi is equivalent—among scientists—to membership in Phi Beta Kappa in general academic life.

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PHYSICS

Fast Electrons Added To List of Atomic "Bullets"

FOR the first time anywhere scientists at the University of Notre Dame have demonstrated that an electron—lightest of all atomic particles—can produce an atomic disintegration.

Prof. George B. Collins, Dr. Bernard Waldman and William R. Polye of the Physics department have shot swift flying electrons from the Notre Dame atom smasher into atoms of the chemical element beryllium. (*Physical Review*, Feb. 15). Out of the impact each beryllium atom, of mass nine, was turned into two atoms of helium, each with mass four, and into a neutron of mass one. The energies of the electrons used as "bullets" in the research were 1,720,000 electron volts.

The experiments are highly important to science because they indicate another way in which neutrons can be created by atomic bombardment. Neutrons are the massive, neutral particles used so widely in the current splitting of uranium with the release of vast amounts of atomic energy.

Previously scientists have been unable to effect transmutation of the elements and atomic disintegration with electrons. Cores of hydrogen atoms, known as protons; deuterons; and neutral particles, the neutrons, have been employed.

Prof. Eugene Guth, of Notre Dame, made the mathematical calculations forecasting that high energy electrons might disintegrate beryllium in a way which these experiments have now confirmed.

The actual train of events in the bombardment, reports Prof. Guth, is that beryllium of mass nine, when struck by the electron, forms beryllium of mass eight, plus a neutron, plus a low energy electron. The beryllium, mass eight, almost instantly breaks down into two helium atoms, each with atomic mass four.

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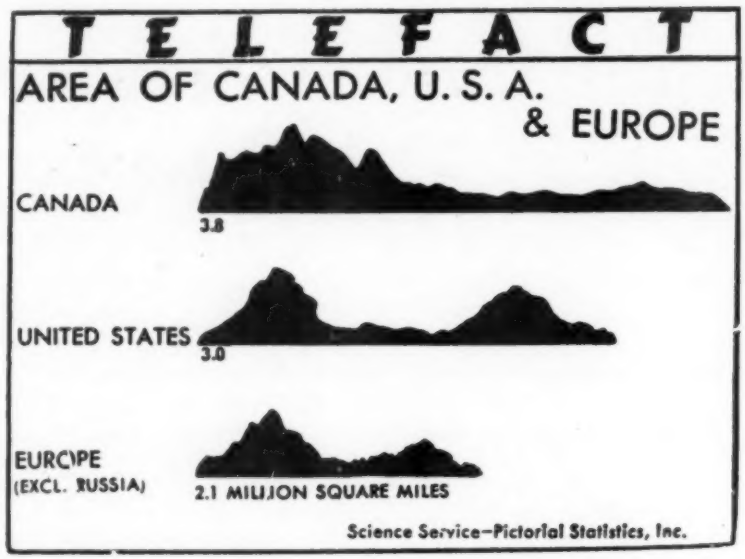
Jamestown Island, famed in Virginia history, is really about a dozen islands cut apart by creeks.



MEDICINE

Blue Dye May Have Role In Sulfanilamide Treatment

When Patients Turn Blue, Injection of Methylene Blue Restores the Oxygen-Carrying Hemoglobin of Blood

WHEN patients getting sulfanilamide treatment turn blue, as a number of them alarmingly do, it may be helpful to inject into their veins a blue dye, methylene blue. Dr. William B. Wendel, of the University of Tennessee College of Medicine, makes this suggestion on the basis of investigations he has made there and at Washington University School of Medicine, St. Louis.

Dr. Wendel has just reported details of his investigations to the scientific publication, the *Journal of Clinical Investigation*. Associated with him in part of the investigations were Dr. Alexis F. Hartman of Washington University and Dr. Anna Dulaney of the University of Tennessee.

Methylene blue is the same dye that was widely heralded a few years ago as a life-saving antidote in cases of carbon monoxide and cyanide poisoning. According to Dr. Wendel's studies, the dye may find a new field of usefulness by making sulfanilamide treatment less hazardous for some patients, especially those having heart and respiratory involvement, and by making it possible to give larger doses of sulfanilamide, thus extending its usefulness in combating infections.

Dr. Wendel believes that the reason some patients turn blue when under sulfanilamide treatment is because some of the oxygen-carrying hemoglobin of their blood is converted into methemoglobin, which cannot carry oxygen. As a result the tissues of the body are at least partially suffocated. If this condition went far enough it would end fatally.

When methylene blue is injected into the veins, the methemoglobin disappears rapidly from the blood and is replaced by an equivalent amount of hemoglobin, Dr. Wendel reports.

Medical scientists are not all agreed that development of methemoglobin is the cause of the blueness (cyanosis is the technical term) of some patients during sulfanilamide treatment. Dr. Wendel points out that the frequency of methemoglobin development following sulfanilamide treatment has not been determined, but he and his associates found at least traces of this chemical in the blood of approximately 98 out of 100 patients who were getting sulfanilamide. He therefore believes the use of methylene blue as an aid to sulfanilamide treatment is worth trying, although he cautions that small amounts of the dye should be used and that it should be injected slowly and carefully into the veins.

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PHYSICS

Harvard Scientist Measures Speed of Light Automatically

New Light Speedometer Can Measure Velocity With Error of Less Than Two and Half Miles a Second

A HARVARD physicist has solved a three-century-old problem of science, how to measure automatically the fastest thing in the universe—the speed of light.

The ultimate velocity of about 186,000 miles per second has been measured by Dr. Wilmer C. Anderson, research fellow, by crimping the light beam with "permanent waves," 19,200,000 of them per second.

This new light-speedometer is the first which has not required visual observation by the human eye, and which has eliminated friction as a possible source of error. It can measure light-velocity with an error of less than two and a half miles per second. It is believed the apparatus will give the most accurate measurements of light-speed ever made.

The equipment has been put to work on one of the basic problems of modern physics and astronomy — whether the speed of light is actually constant under all conditions, or whether it varies. Although many important theories are based on the assumption of a constant velocity of light, past measurements have been inconclusive on this point.

In contrast with the large scale of some types of light-speedometers, which have utilized long outdoor tubes, Dr. Anderson's apparatus is contained in a small laboratory room and hallway. Four separate readings of light-speed can be made per minute.

Beam Modulated

The beam of a 1,000-watt projection lamp is passed through a tube which modulates the beam at a frequency of 19.2 megacycles — or in other words makes the beam fluctuate between bright and dim intensity 19,200,000 times a second. Accuracy of the fluctuations is controlled by a standard frequency generator developed by Prof. G. W. Pierce, of Harvard.

With the light issuing from the modulator in waves of known frequency, the main problem is to determine the exact length of the manufactured waves. Velocity is equal to the frequency multiplied by the wavelength.

The fluctuating beam splits at a small sheet of glass held across the path. One side goes up and down a hallway system of mirrors a distance of about 185 yards. This long path is fixed, and its length is known to fifteen thousandths of an inch. The other half of the beam is sent over a shorter path, about two yards long, whose length is slowly varied during the velocity measurement. Each half of the beam has the same wave-form, or light to dark fluctuations, as the original.

After traveling their different paths, the two halves of the light beam are recombined and focussed on a special photoelectric cell, a five-stage electron multiplier tube, which translates the light force into electric impulses whose intensity can be easily measured and recorded.

Intensity The Clue

The basic clue to the wavelengths comes from the intensity of the reunited light beam. The intensity depends entirely on the relation between the fluctuations of the two half-beams as they reunite. If the fluctuations coincide—that is, if the bright parts of one beam enter the photocell with the bright parts of the other beam, then the fluctuations of light intensity will be at their greatest. Conversely, if the two beams "cancel" one another—if the bright spots of one enter the cell with the dark spots of the other—then there will be a minimum fluctuation of the light intensity.

By altering the length of the short path slowly and constantly during the recording, by means of a moving mirror, Dr. Anderson is able to determine the exact point at which the light beams cancel one another. At that point it is known that the long-path beam is entering the photocell exactly 23 half-wave lengths behind the short-path beam, or, in other words, that the long light-path is 23 half-wavelengths longer than the short path. Since the lengths of the two paths in meters is very accurately known, determination of the wavelength of the light waves becomes a matter of simple mathematics. Dr. Anderson has spent three years perfecting the equipment, financed in part by the Carnegie Institution of Washington.

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ANTHROPOLOGY

New Guinea Natives To Be Eased Into Civilization

NATIVES of the Dutch portion of New Guinea may not know it, but they are likely to be eased into civilization.

The mountainous interior of their island home has of late become attractive to mineral prospectors. Airplanes have been called into service to get over the coastal jungle. To the Dutch government, it seemed that the head-hunting natives of the coast, and more especially the gentler, farming groups of the interior, needed protection against too sharp contact with all this machine culture.

So, the Netherlands Committee for International Nature Protection appointed a sub-committee to plan for these Papuan natives. Their report is now ready.

Two ways of safeguarding the natives seemed possible. One was to herd them apart on a reservation like curious permanent exhibits. The other was to prepare them gradually for the changed world which their island will inevitably become. The latter course, being chosen, now awaits approval of Dutch colonial officials.

The plan calls for three stages of transition. It will use missions and mission schools to teach the natives. It will introduce economic improvements. Ultimately, the natives are expected to cooperate with the Dutch government like other colonials.

Efforts to avoid well-known problems that arise in such situations can be seen in the recommendations. Suggestions include: Sufficient farm land should be reserved for the natives. Medical safeguards should keep out diseases. Eastern immigrants should be barred from native reserves. Importation of drugs and alcohol should be forbidden. Natives employed by companies should be protected by regulations. And, more important than it looks—importation and sale of yard goods to natives should be prohibited, lest they be tempted away from their suitable native clothing. This is a health measure, based on Australian experience.

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MEDICINE

New Method of Attack On Arthritis Suggested

A NEW method for attacking the problem of arthritis is provided by experiments in which mice were given the disease complete with swollen, stiff knees and swollen toe joints like those rheumatic humans have. The experiments are reported by Dr. Albert B. Sabin, of the Rockefeller Institute for Medical Research. (*Science*)

There is even a possibility, it appears from the report, that the cause of cases of arthritis for which no cause has yet been found may turn out to be an unusual kind of "germ" or micro-organism.

It was by injecting such a germ into the veins or abdominal lining of mice that Dr. Sabin produced the disease in these animals.

"Whether or not a similar micro-organism shall be found to play a part in related human affections," Dr. Sabin says, "the experimental disease provides a useful tool in the investigation of many pertinent questions."

The germ which caused the arthritis in mice is a pleuropneumonia-like microbe which passes through porcelain filters, as viruses do, and which is about the size of vaccine virus. It was obtained from the brain of a normal mouse. Dr. Sabin has also been able to cultivate it from chronically affected joints of the arthritic mice.

The method of growing this germ, involving what Dr. Sabin calls "blind passage," may, he believes, be profitably applied to the study of human arthritis of unknown origin.

The mouse arthritis germ is somewhat like another mouse germ which Dr. Sabin has recently studied and which apparently is spread by other germs rather than by flies, mosquitoes or other more usual germ transmitters.

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PSYCHOLOGY

Typical Business Man Must Watch His Sense of Humor

THE typical American business man who places high value upon utility must beware if he is not to be accused of having no sense of humor. Warning that strong attachment to the practical does not accompany the ability to chuckle over a good joke comes from Dr. N. Franklin Stump of Keuka College who reports new experiments in humor to the *Journal of General Psychology*. (January)

This moral was drawn by Dr. Stump from results of a sense of humor test which he gave to 90 Keuka College girls —a test which included 90 jokes and 12 humorous drawings culled from 9,000 jokes in as many as 277 different fields in which men have tried to be funny. They ranged all the way from side-splitters to those that fall completely flat.

Another test revealed the basic attitudes of these same girls, showing whether they were, as individuals, theoretically minded, economic, aesthetic, social, political or religious.

The aesthetic attitude, Dr. Stump found, is very slightly related to sense of humor, but the economic attitude which is, or ought to be, that of the business man, is related inversely—if you want money, you can't have much fun.

If it takes a sense of humor to enjoy "comic" pictures, he said, it is an entirely different sort of humor from that to which jokes appeal. The relation between scores on jokes and pictures is practically non-existent.

Fat people cannot be assured by their weight of possessing a strong sense of humor, if the Keuka girls are typical. Height, in these tests, is more indicative of humor than is weight.

Perhaps you think you have a good sense of humor. Don't fool yourself. A lot of the Keuka girls thought so, too,—until they took Dr. Stump's test. The ability to judge of your own humor is very faulty. There is no relation whatever between the self-estimates of these girls and their response to the jokes—or even to the comic pictures.

Bright girls and the emotionally mature get no more fun out of the funny than do their classmates.

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●RADIO

Dr. Gustav Egloff, director of research for the Universal Oil Products Company, will be the guest scientist on "Adventures in Science" with Watson Davis, Director, Science Service, over the coast to coast network of the Columbia Broadcasting System, Saturday, April 1, 6:15 p. m. EST, 5:15 p. m. CST, 4:15 p. m. MST, 3:15 p. m. PST. Listen in on your local station. Listen in each Saturday.

A stone fish-hook used by some fisherman of about 7000 B. C. was found in France in a peat bed 22 feet below the surface.

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Are YOU getting FULL MEASURE for your Dollar?

Without accurate, reliable *information on the* comparative value of *competing brands your everyday buying can be a wasteful business.* With *it, you can save substantial sums. This month,* CU Reports *helps consumers save money by reporting on soap, canned peaches and asparagus, tea, men's topcoats, can openers, and juice extractors.*

"We will eat a bar of it while doing handsprings up Fifth Avenue"

"If any soap is soothing to any kind of skin," says *Soap,* the leading trade magazine of the soap industry, "we will eat a bar of it while doing handsprings up Fifth Avenue."

With the same engaging candor, *Soap* states, "To him who would advertise successfully in the intensive competitive fight for soap business, not too much attention can be paid to these minor details such as scientific exactness, strict adherence to proved facts, and misleading implications."

With these findings, the results of recently completed tests of toilet soaps, published in this month's issue of *Consumers Union Reports,* agree. Over 150 brands are rated by name, for price and quality (you can pay anywhere from 50c to $1.97 per pound of dry soap for certain brands but get better quality for only 9.1c); those that may irritate or actually damage the skin are pointed out.

It's Illegal, but . . .

. . . plenty of packers put less peaches into their cans than the law requires. The names of the 21 out of 36 brands of canned peaches tested by CU which were illegally slack-filled are given in this report. Another report gives price and quality ratings of 39 brands of canned asparagus and asparagus tips.

Good bills and bad bills . . . A bad one costs consumers plenty

New food and drug bills are now pending in 13 states. In an article describing this legislation, the bills which should be vigorously backed and those which should be opposed are pointed out. In another article the effects of the Miller-Tydings price-fixing act — now in operation a year and a half—are discussed. The results of studies showing that this law has cost consumers many thousands of dollars are noted.

How to be rich and successful . . .

The dazzling promises of correspondence school ads are analyzed and clues given for determining which schools are fakes and which are honest. Many an impressively-titled "institute" is but a one-room office in an obscure business building. Hundreds have been proceeded against by Federal authorities for fraudulent practices.

"A major crime in gastronomy"

"We buy it ignorantly, prepare it abominably. . . ." says a recent article on tea in a popular magazine. Far be it from Consumers Union to concur in a sweeping statement like this, but there is something to what this writer says. To help American tea drinkers acquire skill in tea purchasing, 40 brands of black, mixed, oolong and English Breakfast tea were given taste tests by ten experts and rated by name. Instructions on how to prepare tea properly are given and current advertising claims to the effect that tea "peps you up" are analyzed.

This year the consumer will get the best value for his money . . .

. . . in men's topcoats of a certain type at a certain price level. What type and which price level may be ascertained by reading the report on men's topcoats in this issue. Twenty-three brands sold under the manufacturer's names are rated for quality and workmanship.

●

Other reports and articles in this issue rate can openers and fruit juice extractors and discuss phases of the sugar and insurance industries of particular significance to consumers. To get this issue just mail the coupon below.

COMING IN APRIL!—*The* 1939 *edition of Consumers Union's Annual* Buying Guide. *Running to nearly* 300 *pages and rating over* 2,000 *brands of products by* names as *"Best Buys," "Also Acceptable," and "Not Acceptable," this valuable handbook is included in the yearly subscription to* Consumers Union Reports *without extra charge.*

To: CONSUMERS UNION of U. S., Inc.
17 Union Square W, New York, N. Y.

Send me CONSUMERS UNION REPORTS for one year and the 1939 BUYING GUIDE when it appears. I enclose $3. I agree to keep confidential all material sent to me which is so designated.

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•First Glances at New Books

Physiology

SENSIBLE DIETING AND THE ENGEL VITAL CALORIE DIETS—William Engel—*Knopf,* 408 p., $2.50. The physician who—unwittingly, he says—started the lamb chop and pineapple reducing diet makes amends in this book for some of the disastrous results of haphazard application of that diet. That, it seems, was a radical diet, safe for the one person for whom it was prescribed. Other less radical diets which should be equally effective and certainly far safer for the average person trying to lose weight are given in this book, together with considerable sound advice on the subject of weight reducing and nutrition.

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Ecology

PLANT AND ANIMAL COMMUNITIES—Theodor Just, ed.—*University Press, Notre Dame, Ind.,* 255 p., $2.50. Consisting of ten papers by leading ecologists presented last autumn at a symposium held at the Cold Spring Harbor Biological Station, this volume gives a most interesting and useful conspectus of the present status of sociological ecology in America.

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Entomology

ATLAS OF THE SCALE INSECTS OF NORTH AMERICA, SERIES II—Gordon Floyd Ferris—*Stanford Univ. Press,* Bound, $8.75; unbound, $7.75. The second series of one of the most ambitious taxonomic publications ever attempted. Economic entomologists will find the large, detailed drawings invaluable in their work.

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Physiology

PROBLEMS OF AGEING: BIOLOGICAL AND MEDICAL ASPECTS—E. V. Cowdry, ed.—*Williams & Wilkins,* 758 p., $10. See page 184.

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Medicine

IODINE AND THE INCIDENCE OF GOITER—J. F. McClendon—*Univ. of Minnesota,* 126 p., $5. A compilation of a large amount of data on the distribution of iodine and the distribution of goiter and cretinism which will be of interest to scientific investigators in this field.

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Biography—Medicine

CONSULTATION ROOM—Frederic Loomis *Knopf,* 281 p., $2.50. Exciting, dramatic and humorous tales about the author-physician's own life and his patients' make this a very readable book. In addition, much sound information on medical matters can be imbibed via the sugar-coated route.

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Safety

ALCOHOL AND TRAFFIC—Samuel R. Gerber—*Better Books Press,* 64 p., 40 c.; 12 or more, 30 c. The coroner of Cuyahoga County, Cleveland, Ohio, discusses alcohol in relation to traffic accidents, giving statistical information obtained in his county. The booklet should be useful to educators, safety directors and others interested in the traffic accident problem.

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Medicine

LANDMARKS IN MEDICINE—Introduction by James Alexander Miller—*Appleton-Century,* 347 p., $2. Eight distinguished medical scientists wrote these lectures, on interesting and important medical topics, in non-technical words for the layman. Those who were unable to hear the lectures at the New York Academy of Medicine can now read them in this collection.

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Child Study

BABY CARE DURING EXPECTANCY AND ITS FIRST YEAR—May E. Law—*Lippincott,* 13 pamphlets (Lippincott Baby Series), $2. Sound, helpful advice for mothers, written by an English woman physician, is attractively presented in these 13 pamphlets—one for the expectant mother and one each for the first 12 months of baby's life—which are boxed together like a book.

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Photography

THE ART OF TABLE-TOP PHOTOGRAPHY—Arthur E. Gleed—*American Photographic Pub. Co.,* 46 p., 20 plates, $1.25. A fascinating hobby for stay-at-homes. Using twigs, little rocks, wire and odds and ends, the author arranges miniature scenes which he photographs with remarkable effect. He calls it "my adventures in the world of make-believe".

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Chemistry

UTILIZATION OF FATS—H. K. Dean—*Chemical Publishing Co. of N. Y., Inc.,* 346 p., $6. Here is a theoretical and technical treatise on the composition, extraction, analysis, and application of fat. It is strictly a book for the expert, who will welcome the very large bibliography of references in the technical literature.

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Photography—History

PHOTOGRAPHY AND THE AMERICAN SCENE—Robert Taft—*Macmillan,* 546 p., $10. The author, professor of chemistry at the University of Kansas, quite correctly calls this a social history for the century 1839-1939. Here is a history of American photography that contains little-seen pictures of historic events. The first daguerreotype made in this country, the first aerial view of Boston (1860) and Civil War scenes are typical.

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Agricultural Engineering

PLANS OF FARM BUILDING FOR WESTERN STATES—U. S. Dept. of Agriculture—*Govt. Print. Off.,* 120 p., 60 c. This attractive publication offers sketches and ground plans not only of houses and barns, hog-houses and corn-cribs, but auxiliary structures ranging from ambitious grain elevators and domestic water systems to such handy devices as a rope-bottom potato bin and an iceless refrigerator. Detailed working drawings are obtainable from county agents.

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Photography

COMMERCIAL PHOTOGRAPHY WITH THE MINIATURE CAMERA—C. A. Goldner—*Camera Craft,* 95 p., $1. Tips for those owners of miniature cameras who would like to make a little money with them, or at least try to break even.

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Chemistry

GENERAL AND INORGANIC CHEMISTRY—Frederick C. Irwin and G. Ray Sherwood—*Blakiston's,* 582 p., $3.50. Introductory chemistry as taught at Wayne University. The purpose of the book is to inform the student concerning the contributions of the science of chemistry to his own physical world and also to give him an adequate foundation for future courses in this subject.

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Engineering—Chemistry

PLASTICS, PROBLEMS AND PROCESSES—Dale E. Mansperger and Carson W. Pepper—*International Textbook Co.,* 187 p., illus., $2.50. The field of molding plastics is one which has been largely developed by industrial research. Now, however, the academic side of the field comes forward and offers the first textbook on the subject. It is designed for use in technical high schools where the students will make various objects out of plastic material.

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